C. E. FROST.

ROTARY BRUSH.

APPLICATION FILED JUNE 22, 1918.

1,394,993. Patented Oct. 25, 1921.

FIG. 1

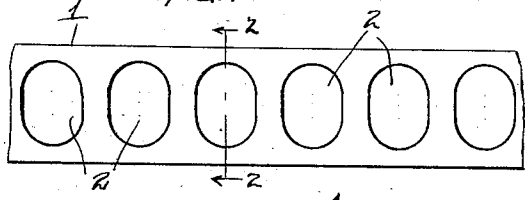


FIG. 2



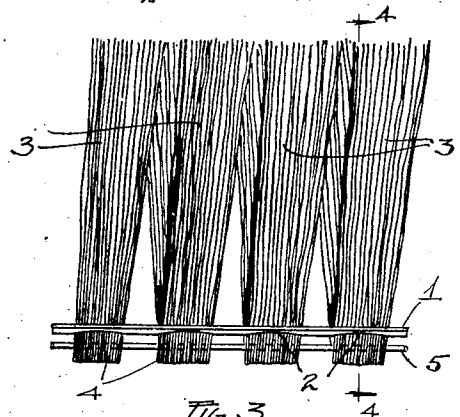


FIG. 3

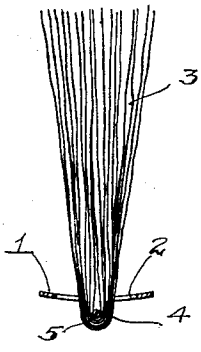


FIG. 4

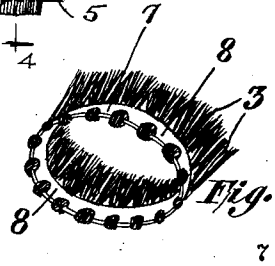


Fig. 8.

FIG. 6

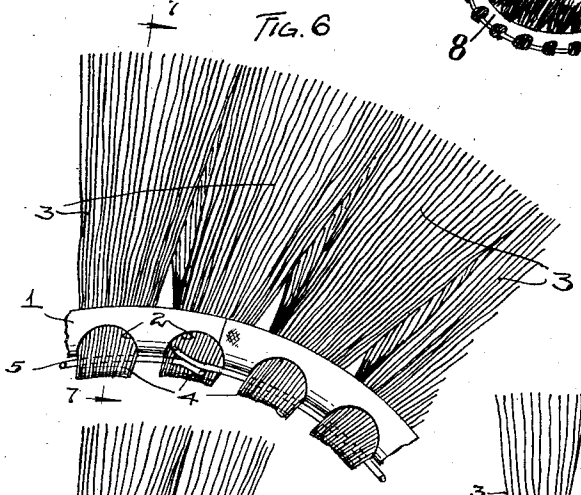
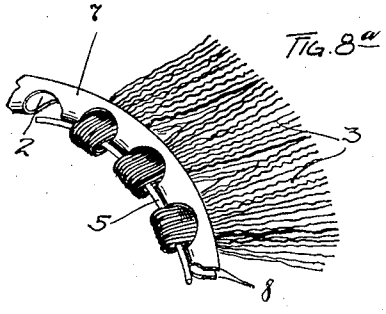


FIG. 8a



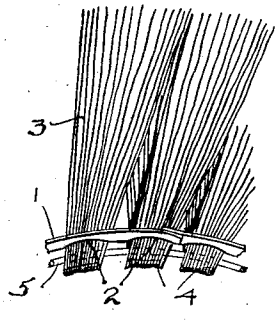


FIG. 5

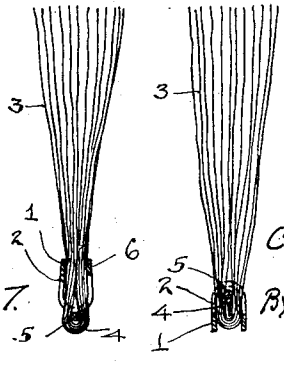


FIG. 7.

FIG. 9

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ROTARY BRUSH.

1,394,993. Specification of Letters Patent. Patented Oct. 25, 1921.

Application filed June 22, 1918. Serial No. 241,372.

To all whom it may concern:

Be it known that I, CLINTON E. FROST, a citizen of the United States, and a resident of East Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Rotary Brushes, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The present invention, relating, as indicated, to rotary brushes, is more particularly directed to an improved brush section for use in a rotary brush, either alone or in coöperation with other similar sections and to a new and improved method of making such brush section. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail one method and one product exemplifying my invention, such disclosed procedure and product constituting however, but one of the various applications of the principles of my invention.

In said annexed drawing:—

Figure 1 is a plan view of a strip showing the same after the first operation in the manufacture of my improved brush section; Fig. 2 is a section of the same on the line 2—2, Fig. 1; Fig. 3 is a side elevation of the strip shown in Figs. 1 and 2 with bristles looped through the openings in the same; Fig. 4 is a section on the line 4—4, Fig. 3; Fig. 5 is a partial side elevation of the brush of Figs. 3 and 4 after the next step in the manufacture showing the strip partially bent up to engage the bristles; Fig. 6 is a similar partial side elevation of the brush showing the strip completely bent up; Fig. 7 is a section on the line 7—7, Fig. 6; Fig. 8 is a view in perspective of another type of brush constructed in accordance with the present invention; Fig. 8ª is a similar view on somewhat larger scale of a portion of such last mentioned type; and Fig. 9 is a view similar to Fig. 7 showing another modified brush.

In Fig. 1 I have shown a strip 1, preferably of metal, which is first punched to form a series of spaced holes or openings 2, shown as oval, but which may be round or square, through which the brush material may be inserted at a later stage in the manufacture. At the same time that the openings 2 are formed in this strip, the strip is given a slight bend, as illustrated in Fig. 2, so that it is concave in its upper surface. Through the openings 2 formed in the strip 1 is then passed the brush material in the form of a series of bunches of bristles 3, which are doubled to form loops 4, each loop portion being passed through the opening a slight distance, as illustrated in Figs. 3 and 4. After the brush material has been looped into the openings in the strip it is fastened in that position by some such means as the wire 5, which is laced into the loop portions 4 beneath the plate 1, and the strip, with the brush material so engaged in the opening thereof, is then circled or bent into an annular form, as illustrated in Figs. 5 and 6, with the ends or edges of the plate overlapping slightly, although if desired these ends may be made to abut against each other.

The next step in the manufacture of the brush section is the fastening or welding of the adjoining ends of the strip, which is preferably accomplished by spot-welding the over-lapping ends together, and of course if the ends are abutting they may be butt-welded or otherwise fastened, as may be convenient. The ends of the wire 5 also overlap slightly, as shown in Fig. 6, and this may be fastened if desired, although this is not necessary.

The strip 1, which is still in the concave condition illustrated in Fig. 2, is now bent into a U-section, as shown in Fig. 7, so that the edges 6 of this trip are pressed tightly against the outermost strands of the brush material and engage each bunch of strands and hold the same in the radial position which they should occupy. This engagement of the brush material by the edges of the plate and the natural pull of the material against the wire which is beneath or within the circled strip serve to securely engage the material in the strip, and this completed brush section may be readily assembled with others or alone on a mandrel in the usual manner.

In Figs. 8 and 8ª I have shown a modification of the foregoing construction, in which brush material is similarly assembled and

retained in a strip 7, which is circled as shown in previous figures, but with its sides 8 in concentric cylindrical relation so that the finished brush section approaches a cylinder, and not a disk, in form. The uses of such a "cup-shaped" brush section, as it may be styled, in contradistinction to those of the more familiar form of Fig. 6, do not constitute a matter of present interest, it being sufficient to note that structurally there is no departure from the spirit of the present invention.

In Fig. 9 there is shown a brush in which the plate or strip has its edges bent radially inwardly instead of outwardly as in the brush of Figs. 5 and 6, and in this case the base of the looped bristles and the inner edges of the plate will lie in substantial alinement.

The particular brush material used is, of course, not important, and different types of brushes may consist of bristles, hair, wire, tampico, rattan, or any other material used for brush making purposes.

Other forms may be employed embodying the features of my invention instead of the one here explained, change being made in the form or construction, provided the elements stated by any of the following claims or the equivalent of such stated elements be employed, whether produced by my preferred method or by others embodying steps equivalent to those stated in the following claims.

I therefore particularly point out and distinctly claim as my invention:—

1. A circular brush unit, comprising an annular base ring, a series of sections of brush material looped over said ring, a clamping member comprising an apertured base for holding said loops firmly upon said ring and spaced parallel sides for holding the brush sections in radial relation thereto.

2. A circular brush unit, comprising an annular base ring, a folded clamping bar of U-shaped cross section, the base of the bar being provided with a series of apertures, the material of the bar between the apertures therein contacting with said base ring, a series of sections of brush material looped over said ring at points intermediate the points of contact of said clamping member therewith, the ends of said brush material extending radially and being clamped between the parallel sides of said U-shaped clamping member.

3. In brush manufacture, the steps which consist in forming a series of apertures in a strip of metal, passing the looped brush material through each of said apertures, threading a base member through each of the loops, bending said strip and base member into circular form, joining the respective abutting ends thereof, and thereafter bending said strip of material longitudinally into U-shaped cross section so as to laterally compress said material adjacent the looped portion thereof and contact with said base member at intermediate points, and thus highly compress the side portions of said U-shaped strip upon the brush material therebetween.

Signed by me, this 20th day of June, 1918.

CLINTON E. FROST.